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APPLIED SCIENCES

NEW AIR CUSHION VEHICLE UNDERGOES TRIALS AT TIANJIN

Tianjin TIANJIN RIBAO in Chinese 4 Sep 79 p 1

[Article: "China's Largest Air Cushion Vehicle Successfully Trial Produced"]

[Excerpts] With the advent of the air cushion vehicle [ACV], the ancients' dreams of ships that sail over land and flying carpets have become reality. Yesterday, a reporter of this paper submitted a startling report from Tanggu: this dream ship had actually appeared in the city. China's largest air cushion vehicle, designed by Institute 708 and successfully trial produced by the Dagou shipyards with the cooperation of some 52 other groups, celebrated its trial run yesterday morning.

The air cushion vehicle is a craft that employs gyroscopic principles to move. It creates a cushion of air between the bottom of the craft and the surface of water or land by using high atmospheric pressure which raises the craft totally or only partially off the surface of the water or land. Resistance is thus greatly reduced and the craft can speed over water or land. Today's AVCs can be broken down into three categories: the "full cushion lift" hovercraft, the "sidewall" AVC, and winged carft. Air cushion technology began to grow in the 1950's and for shipbuilding, it became a whole new area of development when applied to vessels.

The ACV trial produced by the Dagou shipyards and the other groups has the following capabilities and features: 1) It can operate over water, land, grasslands, marshlands, lakes, shallows and beaches; 2) It is as fast as a locomotive or automobile; 3) It has superb cross-country capabilities and can negotiate hidden reefs, shoals, nets and other underwater obstacles when operating at sea or on rivers, lakes and harbors. When operating on land, it can cross obstacles about a meter high or ditches about 5 meters wide. It can also safely operate on inland rivers with treacherous stretches; and 4) It is versatile. For example, it doesn't require dock facilities. Attending yesterday's trials were more than 400 comrades representing the State Council, the Sixth Ministry of Machine Building, naval units, the Tianjin, the Tianjin garrison, the Municipal Party Committee, the Municipal Revolutionary Committee, etc. Also present were heads of committees, institutes and bureaus and the comrades and workers who plan and build air cushion vehicles, engineering and technical personnel and cadres.

In the morning, the reporter boarded the ACV in a vacant field. The craft then went on a trial run over water and nearby marshlands. This odd vessel, because it mounts engines and propellers, resembles an airplane. Because it has cabins, decks, and a bridge, it resembles a boat. But it differs from conventional boats because of the flexible nylon/plastic skirt that surrounds it. As it starts to move, only the droning of the engines can be heard. The two engines drive six fans which force a tremendous amount of air down inside the skirt. From inside, as the craft gets underway, one has the sensation of being on an airplane at takeoff. As comrade Deng Guisen [6772 2710 2773], who participated in the design of the craft, explained to the reporter: When the cushions are completely filled with air, there is great pressure which forces the bottom of the vehicle off the surface (of the water or land) to a height of about a meter.

The building of this full-lift hovercraft got underway in December 1977 in a campaign launched by the Dagu shipyards in conjunction with some 52 groups representing provincial and municipal as well as military units. Great effort was made by the masses of workers, commanders and fighters, technical personnel and cadres. In a struggle that lasted for a year and 8 months, they overcame problem after problem involving design and technology. The results of yesterday's trial run proves that this craft has met the initial design specs.



Air cushion vehicle in its run on the river.

CSO: 4008

BIOCHEMISTRY

AUTHOR: None

ORG: Biological Membrane Research Group, Third Laboratory, Institute of Biophysics, Chinese Academy of Sciences

TITLE: "Study on Proteins Insertion into Liposome (I) -- Study on the Insertion of Cytochrome c into Liposome"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 1-5

ABSTRACT: This article reports a study on the use of the supersonic method to determine the relative conditions and influential factors in the insertion of cytochrome c into liposomes prepared from soya bean lecithin, and a comparison of the cytochrome c insertion effect against those determined by the dialysis method and the choline dilution method. ANS fluorescent probe is also being utilized to determine whether there is any configurational changes during the redox process of cytochrome c. Besides the usual biochemical analysis, the cytochrome c inserted liposomes are also observed under electron microscope.

This paper was received for publication on 5 February 1978.

AUTHOR: None

ORG: Institute of Biophysics Sixth Laboratory of Chinese Academy of Sciences and Hepatitis Research Group of Hubei Institute of Microbiology

TITLE: "Preliminary Study on the Isolation of Human (Viral) Hepatitis Surface Antigen and Its Sedimentation Properties"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 5-9

ABSTRACT: This article reports successful isolation of large 420 Å HB_sAg granules and small 200 Å HB_sAg granules by means of sectional centrifuge and differential zone centrifuge. In the former case, immunoelectrophoresis indicated no presence of serum proteins, besides contamination of other HB_sAg granules. In the latter case, electron microscopic observations show neither presence of large 420 Å granules nor rod granules, but traces of serum protein component was found to have contaminated it. It is confirmed that purified small 200 Å granules will converge upon standing. Measured by analytical ultracentrifuge, the sedimentation coefficient of the area under the peak of 200 Å granules was found to be 40S, and that of rod granules was found to be 80S.

This paper was received for publication on 3 September 1977.

AUTHOR: None

ORG: Tumor Research Group, Fourth Laboratory, Shanghai Institute of Biochemistry, Chinese Academy of Sciences

TITLE: "Determination of Alpha-fetoprotein (AFP) by 'Bridge Immuno-electrophoresis'"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 10-11

ABSTRACT: This article introduces an improved technique of the general immunoelectrophoretic determination of AFP that will raise the sensitivity to the level of radio-rocket electrophoresis. The technique involves the adoption of a 0.5-2 milliliter bridge-shaped sample tube inserted at the boundary line, which increases the volume of the sample to improve its sensitivity, while affording the concentration of AFP to be lowered to 2-10 milligrams per milliliter. If the "bridge immuno-electrophoresis" technique is incorporated with the principle of radio-rocket electrophoretic autodisplay, the sensitivity of AFP can be as high as 0.4 milligrams per milliliter.

This paper was received for publication on 1 March 1978.

AUTHORS: ZOU Yongshui [6760 3057 3055]
QIAN Xiaozhen [6929 5135 6297]

ORG: Both of Shanghai Institute of Biochemistry, Chinese Academy of Sciences

TITLE: "Determination of Immobilized Amino Acids and Polypeptide Amines"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 12-14

ABSTRACT: In the determination of immobilized amino acids and polypeptide amines, the authors report the adoption of salicylic aldehyde as the reacting reagent, and absolute ethyl alcohol as the reacting medium, when salicylic aldehyde forms Schiff base with immobilized free amines, washed off the excess salicylic aldehyde with ethyl alcohol after the reaction is completed, and then displaced the immobilized salicylidene with benzylamine in ethyl alcohol solution, and measured the optical density at 315 nm on spectrophotometers. Finally, the content of amines is converted from the weight of the sample and the molar extinction coefficient.

This paper was received for publication on 25 February 1978.

AUTHORS: GAO Kuixiong [7559 7608 7160]
ZHOU Guanzhong [0719 0385 0022]

ORG: Both of Shanghai Institute of Experimental Biology

TITLE: "Application of Controlled-pore Glass Bead Carrier in Steroid Gas Liquid Chromatography"

SOURCE: Beijing SHENGWUHUSXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 15-17

ABSTRACT: The authors introduce the technique of using controlled-pore glass (CPG) bead carrier in gas liquid chromatographic analysis of steroids. The techniques introduced include the silicanization of the carriers, the coating of the setting agents, the filling of the columns, the preparation of the steroid derivatives, and the conditions of gas chromatography. By using columns with CPG carrier that is coated with 0.76% SE-30 low setting agent, it is possible then to analyze the five E_0 , E_2 , E_3 , P_2 and Ch ethyl ester derivatives of steroids with fast and complete isolation without sample cleavage. This paper received on 18 Jul 77. Thanks are expressed to Zhang Shuliang [1728 0647 5328], Song Zengming [1345 1073 2494] and Wang Zhongshan [3769 0112 1472] of the Shanghai Drug Administration for assistance.

AUTHOR: TANG Peisong [3282 0160 2646]

ORG: Institute of Botany, Chinese Academy of Sciences

TITLE: "Changes and Regulations of the Means of Electronic Transference in Plant Mitochondria --Further Discussion on the Many Means of Respiratory Metabolism"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress of Biochemistry and Biophysics] No 4, Aug 78 pp 18-26

ABSTRACT: On the basis of an article by the author in 1965 that proposed the theories of "multipal means of metabolism" and "controlled metabolism" on account of the dynamic relationship between genes and morphological structures with physiological functions, this article reviews and discusses the significance of recent research on the changes and regulations of the means of electronic transference in plant respiration chains, and its application to solving the problems regarding the relations between heterosis and mitochondria "complementation", and to establishing the enzymological index for selecting highly photosynthetic efficient plant varieties. This paper was received for publication on 20 Aug 77. This article is a revision of an article read at the "National Cell Hybridization and Mitochondria Complementation Conference" convened at Lanzhou on August 1977.

AUTHORS: CHEN Jianwen [115 1696 2429]
JING Guozhong [7234 0948 1813]

ORG: Both of Institute of Biophysics, Chinese Academy of Sciences

TITLE: "Restriction Endonuclease and Its Application"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 26-35

ABSTRACT: The authors introduce the knowledge concerned with restriction endonuclease that includes: 1) its nomenclature and distribution; 2) its classification and the three characteristic ends; 3) its purification through bacterial culture, bacterial breaking, nucleic acid elimination, ammonium sulfate precipitation, chromatography and enrichment; 4) its examination by viscosity, gel electrophoresis, and nitrocellulose filtration; and 5) its application to establishment of DNA gene groups' physical pattern, localization and isolation of genes, serial analysis of DNA molecular bases, comparison of related DNA molecules, and hereditary engineering.

This paper was received for publication on 13 December 1977.

AUTHOR: LI Guodong [2621 0948 2767]

ORG: Institute of Physics, Chinese Academy of Sciences

TITLE: "Development and Applications of Biological Magnetism (II)"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 39-44

ABSTRACT: Continuing a previous section of the article, this section deals with the application of biological magnetism in such fields as: 1) medicine that includes magnetic therapy, magnetic medicine, magnet-treated water, magnetic diagnosis, and magnetic medical instruments; 2) environmental protection that includes removal of harmful solid materials, elimination of harmful materials from water and air, and disinfection with magnet-treated water; and 3) biological engineering that includes magnetic devices and equipment, terrestrial magnetic navigation and localization in bionics, and magnetic anomaly in hereditary engineering.

This paper was received for publication on 19 July 1977.

AUTHOR: None

ORG: Biochemistry Section, Lanzhou Institute of Biological Preparations

TITLE: "Zone Electrophoresis Techniques (IV)"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 pp 45-49

ABSTRACT: Continuing three previous sections of the article, this section introduces the technique of polyacrylamide gel disc electrophoresis that includes its fundamental principles, equipment and materials required, and its experimental procedure and technique. In conclusion, a review is made on such other newer advances as glucose gel column electrophoresis, glucose gel disc electrophoresis, and gel isoelectric focusing electrophoresis, and its applications in clinical examination and immuno-biochemical works.

AUTHOR: None

ORG: This Journal

TITLE: "Effect of Cyclic AMP in Frog's Nose"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 p 11

ABSTRACT: This article is a newsbrief reporting the reaction of cyclic AMP to smell in a frog. A study to correlate the electrorhinograph of frogs' smelling of fruit, flower and musk fragrance, and the concentration of cyclic AMP in a frog nose, seems to indicate that cyclic AMP actually participates in the process of producing electric reaction to smell. The conclusion is based on the experimental result that smell raises the effective concentration of cyclic AMP in the tissues, while simultaneously weakens the electric reaction to all types of smell.

AUTHOR: None

ORG: This Journal

TITLE: "Structure of Micronucleus"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 4, Aug 78 p 17

ABSTRACT: This newsbrief reports some observations by chemical and physical methods on the axial particle of chromatin micronucleus which shows that the micronucleus is composed of 200 pairs of base radicals, two molecules each of H_2A , H_2B , H_3 and H_4 histone molecules, and one H_1 molecule. The axial protein is constructed of two disc-like tetramer histones with each covered by a cyclic DNA.

AUTHOR: None

ORG: Department of Biochemistry and Department of Biophysics of First Shanghai Medical College

TITLE: "Extracorporeal Experiment of Tumor Immune RNA"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 1-4

ABSTRACT: A study on the immune activity of HCA immune celial exudative cells and immune RNA imparted celial exudative cells of mice confirms that extracted immune nucleic acid possesses immunological activity that can change normal unimmunized lymphoid cells into active lymphoid cells, the effect of which is directly related to animal types, time of immunization, and dose of immune nucleic acid. The concentration of immune RNA adopted in the experiment is 500-1,000 r/ml. A discussion is also made on the existing two hypothesis on the immunological action of immune nucleic acid, and the prospect of its application to clinical tumor therapy.

This paper was received for publication on 5 December 1977.

AUTHOR: None

ORG: Third Laboratory, Institute of Biophysics, Chinese Academy of Sciences

TITLE: "Preparation of Snail Enzymes and Its Effect on the Cell Walls of Yeast"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 4-5, 47

ABSTRACT: Responding to readers' request, this article introduces the knowledge concerned with the preparation of snail enzymes from the gastric juice of *Achatina fulica* Férussac of Hainan Island, and *Cyclophorus pyrostoma* Moellendorff of Guangxi's Ningshan, mainly according to Fogel et al's technique, and the determination of its effect on yeast parietal cytolysis according to the formation of spheroplast, which is identified by differential microscopes, turbidimetry, and protein determinations. The yeast adopted in the study is 2.346 *Saccharomyces uvarum*. At pH 5.8 - 7.0, and at the enzyme concentration of 20-50 mg protein/gm wet enzyme, the spheroplast formation can be as high as 80-90%. The techniques of storage and treatment for up to six repeated use of the enzymes are also introduced. This paper received on 15 November 1977.

AUTHOR: None

ORG: Fundamental Isotope Research Laboratory of Second Shanghai Medical College, Immunology Research Laboratory of Second Shanghai Medical College, and Shanghai Institute of Traditional Chinese Medicine

TITLE: "Application of Chinese-made Type 49 Glass Fiber Filter Paper In Isotope Liquid Scintillation Measurement"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 6-10, 47

ABSTRACT: This article reports the use of Chinese-made type 49 glass fiber filter paper in the soft β -ray liquid scintillation measurement of the linear relationships and efficiency of water soluble ^3H -TdR, total blood white cell samples, and ^3H -TdR blended isolated lymphatic cells, as well as its application to determine tumor patients' immunity, the influence of calf thymus gland extract on the self mixing of ^3H -TdR in mice thymus cells, vegetative hemagglutinin activity, and lymphatic cell culture of healthy persons, which all proves its equal in quality to those produced abroad. Manufactured by the Shanghai Hongguang Paper Plant, the paper is of 0.3 micron pores, with $\geq 99.99\%$ filtering efficiency, strong water absorbencem and ≥ 230 tensile strength. Paper received 19 Oct 77.

AUTHOR: None

ORG: Tumor Research Section of Shanghai Institute of Biochemistry of Chinese Academy of Sciences, and Examination Section of Sixth Shanghai People's Hospital

TITLE: "Possibility of Hepatitis Virus Contamination in Water Supply"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 10-11

ABSTRACT: An analysis of more than 30 samples from ditches, rivers, wells and water works by IAHA, RPHA and radio-immunity diffused autodisplay examination of HB_sAg shows that some water from ditches and relatively static rivers appears to be positive, which, under electron microscopes, show granules of 22 nm diameter, and other morphological characteristics similar to the HB_sAg in the hepatitis-infected human serum of the hepatitis-infected neighborhood. Following a discussion on the statistics that indicate the direct relationships between hepatitis virus-contaminated water and hepatitis incidence, it is concluded that hepatitis virus-contaminated water supply is very possibly one of the sources of the disease. This paper received on 3 May 1977.

AUTHOR: FAN Shifan [5400 0013 5672]

ORG: Shanghai Institute of Physiology, Chinese Academy of Sciences

TITLE: "On the Mechanism and Cause of Ischemic Changes Arised From Cell Membrane Depolarization During Cardioventricular Muscle Excitement"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 12-17, 11

ABSTRACT: Reviewing recent research on the mechanism and causes of ischemic changes arised from cell membrane depolarization depolarization during cardioventricular muscular excitement, the author summarizes that the drop of the maximum depolarization velocity of the action potential after cardioventricular muscular ischemia corresponds to the dropping of intracellular pH, and an increase of sodium ions and lactic acid concentration, which influences the dynamics of the opening of cell membrane sodium channels, the dynamics of a recovery from sodium channels' deactivation, and the sodium ion equilibril potential. The possibility of this explanation is finally discussed.

This paper was received for publication on 29 September 1977.

AUTHOR: LAO Weide [0525 3634 1795]

ORG: Third Laboratory, Institute of Biophysics, Chinese Academy of Sciences

TITLE: "Bacteriophage Lambda and Its Application in Genetic Engineering (III)"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 18-21

ABSTRACT: This section, the third and last section of the article, deals with the design of DNA multiplication carrier by: 1) utilization and reformation of the locality of the restricted endonuclease of λ bacteriophage to reconstruct a carrier bacteriophage capable of accepting exogenous DNA; and 2) screensselection of restricted localized mutants. In conclusion, a discussion is made on the significance of λ bacteriophage research in gene engineering, disregarding whether it be λ bacteriophage itself, or its being used as carriers.

This paper was received for publication on 7 October 1977.

AUTHOR: ZHENG Guozhang [6774 0948 3864]

ORG: Institute of Biophysics, Chinese Academy of Sciences

TITLE: "Vibration Receptor Organs of Animals"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 37-40, 36

ABSTRACT: The author introduces the anatomy, structure and function of some animal vibration receptor organs that include the Pacini of mammals, the Herbst of birds, the lateral line organs of fishes, and the hair-plate receptors and subgena organs of insects. In conclusion, the author advocates further research on the morphological characteristics, the frequency range of vibration receptors, the threshold amplitude, and the mechanism of energy conversion of vibration receptors with the hope of clarifying the mystery of animal reaction to earthquake.

This paper was received for publication on 11 April 1977.

AUTHORS: DI Sen [5049 2773]
LU Zhu [7627 2691]

ORG: DI of Beijing No 59176 Army Unit, and LU of Shanghai Second Military Medical University

TITLE: "Microstructure and Transfer Functions of the Nervous System (II)"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 41-46

ABSTRACT: Continuing a previous section on the microstructure and transfer functions of the nervous system, this section of the article deals with the chemical transference mediums that dominate the transfer of excitement in the central nervous system of higher order animals. The chemical mediums introduced in this article include the distribution in the brain, metabolism and transfer functions of catecholamide and 5-hydroxytryptamine of the amides, and acetyl choline. The article is to be continued.

AUTHOR: CHEN Shiwei et al [7115 6108 7279]

ORG: Department of Biochemistry, Second Shanghai Medical College

TITLE: "Immune Ribonucleic Acid -- A Substance that Transfers Immunity Messages"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 21-30

ABSTRACT: The author introduces the knowledge concerned with the properties, action principles and actual applications of immune ribonucleic acid (iRNA), as well as its relationship with the transfer factor (TF) under the headings of: 1) the discovery of iRNA and its development; 2) the types of RNA-Ag compounded and antigen deficient iRNA; 3) the biochemical properties of iRNA; (4) the biological properties and effect of iRNA; 5) comparison between iRNA and TF; 6) the action principles of iRNA; and 7) the actual applications of iRNA in immunity reconstructed molecular engineering, and the application of specific antitumor iRNA.

This paper was received for publication on 17 August 1977.

AUTHOR: JIANG Yinghua [5592 5391 5478]

ORG: Southwestern Taojiang Hospital

TITLE: "Influence of Ionization Radiation on the Nucleic Acid Metabolism of Lymphatic Cells"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp 31-36

ABSTRACT: The author reviews recent research concerned with nucleic acid metabolism in terms of DNA and RNA of static lymphatic cells and those during the hyperplastic process prior to radiation, and the effect of radiation afterwards on the metabolism of mono- and cyclo-nucleotides, DNA and RNA, in an effort to establish some indexes for the diagnosis of radiation injury, on the basis of sensitivity, dose dependence, specificity, practicality, and methods and conditions. To cope with insufficient data available so far, the author stresses the significance of further research, as well as the importance of coordinating the present findings with those of hematology, cell genetics, body fluidbiochemistry and immunology that certain laws may be established in this concern.

This paper was received for publication on 26 January 1978.

AUTHOR: GUO Yaojun [6753 1031 0689]

ORG: None

TITLE: "Beijing District Fluorescent Spectrophotometer Coordination Section Established"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 p 46

ABSTRACT: This article reports the establishment of a Fluorescent Spectrophotometer Coordination Section in Beijing on 30 August 1978, under the sponsorship of the Beijing City Science and Technology Committee, and the Chinese Scientific Instrument Company, and attended by representatives from nearly 30 units concerned. The section is aimed at coordinating the mutual use, but under special care, of fluorescent spectrophotometer instruments, mutual assistance in the supply of spare parts, repair and amaintenance service, and organize regular exchange of technical information and experiences.

AUTHOR: None

ORG: Third National Biochemistry Conference Preparative Section

TITLE: "Notice to Muster Thesis for the Third National Biochemistry Conference"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 p 48

ABSTRACT: This notice musters thesis of biochemical research for the forthcoming Third National Biochemistry Conference to be convened at Hangzhou on May 1979 with the participation of 250 representatives. The Chinese Biochemistry Society will also be formally inaugurated. Besides thesis on structure of high molecular biology, functions and synthesis, biological membranes and molecular genetics, papers on medical biochemistry, agricultural biochemistry, industrial biochemistry, biological preparations and reagents, biochemical technology and instruments are also welcomed. Thesis in duplicates should be sent to the National Biochemistry Conference Preparatory Section at Shanghai before the end of January 1979.

AUTHOR: None

ORG: This Journal

TITLE: "General Index of No 1-6 1978 of Progress in Biochemistry and Biophysics"

SOURCE: Beijing SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics] No 6, Dec 78 pp i and ii

ABSTRACT: This is the general index of No 1-6 1978 of SHENGWUHUAXUE YU SHENGWUWULI JINZHAN [Progress in Biochemistry and Biophysics]. The index covers 72 articles.

11,206

CSO: 4009

AUTHOR: ZHANG Chenglie [1728 2110 3525]
LU Zhongshu [0712 1813 1859]

ORG: Both of Department of Biology, Lanzhou University

TITLE: "Effects of Growth Inhibiting Substances From Young Cotton Bolls on Phosphorylation"

SOURCE: Beijing ZHIWU XUEBAO [ACTA BOTANICA SINICA] in Chinese No 2, Jun 79
pp 143-148

EXCERPT OF ENGLISH ABSTRACT: The effects of growth-inhibiting substances from young cotton bolls on phosphorylation in both intact cotton plant and tissue slices of young cotton bolls were determined using ^{32}P as a tracer. The results showed that the incorporation of ^{32}P into the various organic phosphates including high-energy phosphate compounds, were decreased in abscising bolls to about one half as that of developing bolls.

Infiltration of the growth-inhibiting substances into normal boll tissue caused a marked increase in respiration intensity, the synthesis of high-energy phosphate compounds was, however, decreased to 39 percent of that of the control tissue.

AUTHOR: HE Mengyuan [0149 1322 0337]
ZHOU Yayan [0719 7161 6056]
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ORG: All of Department of Biology, Jilin Normal University

TITLE: "The Microsporogenesis and Megasporeogenesis of Soybean"

SOURCE: Beijing ZHIWU XUEBAO [ACTA BOTANICA SINICA] in Chinese No 2, Jun 79
pp 157-162

EXCERPT OF ENGLISH ABSTRACT: This article deals with the morphological aspects of the process of megasporeogenesis and microsporogenesis in soybean. The tempos of microsporogenesis in different anthers of the same flowers were compared, and it has been found that at the leptotene, zygotene, pachytene and diplotene of the first meiotic division there appeared a certain degree of synchrony, while at the uninuclear stage of the microspore a perfect synchrony was observed. The development of different pollen mother cells within the same anther was in most cases highly synchronized. The anther in which the PMC's were found to be in the near stages of the meiotic divisions accounts for 7 percent only.

AUTHOR: LIU Cunde [0491 1317 1795]
ZHANG Sumei [1728 4790 2734]
LI Tongzhu [2621 2717 2691]
MENG Xiaoxiong [1322 1420 7160]

ORG: All of Institute of Botany, Chinese Academy of Sciences

TITLE: "Ethylene Production, Peroxidase Activity and Change of Peroxidase Isozyme During the Ripening of Tomato Fruits"

SOURCE: Beijing ZHIWU XUEBAO [ACTA BOTANICA SINICA] in Chinese No 2, Jun 79
pp 163-170

TEXT OF ENGLISH ABSTRACT: Climacteric rise, ethylene production, peroxidase activity and its isozyme and their interrelationships during the ripening of tomato fruits have been studied. It was found that there was parallelism between ethylene production and climacteric rise. The climacteric rise of tomato fruits was hastened by ethylene applied at the mature green stage. The ethylene production was inhibited by low oxygen and high carbon dioxide partial pressure.

The peroxidase activity in the tomato fruits appeared to be different at three stages, higher in the half red fruits and lower in both green mature and fully red fruits. This activity was increased by ethylene and decreased by lower

[Continuation of ZHIWU XUEBAO, No 2, Jun 79, pp 163-170]

partial pressure of oxygen. The peroxidase isozymes appeared also different at different stages of ripening. There were four bands in young fruits, three in green mature fruits, five in half red fruits and three in fully red fruits. After the application of ethylene to the tomato fruits, there appear one new band of peroxidase isozyme.

AUTHOR: CHEN Ruiyang [7115 3843 7122]
SONG Wenqin [1345 2429 5367]
XU Yuefan [1776 1878 0028]

ORG: All of Department of Biology, Nankai University

TITLE: "The Banding Pattern of the Rye (*Secale Cereale*) Chromosomes and Its Application"

SOURCE: Beijing ZHIWU XUEBAO [ACTA BOTANICA SINICA] in Chinese No 2, Jun 79
pp 177-180

TEXT OF ENGLISH ABSTRACT: The Giemsa C-banding technique has been used in this paper for analysis of chromosome banding pattern, and the changes of the chromosome structures of irradiated rye and wheat-rye were identified preliminarily. Heterochromatin polymorphism of rye was also discussed.

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CSO: 4009

GEOGRAPHY

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ORG: All of the Group of Environment and Endemic Disease, Division of Chemical Geography, Institute of Geography, Chinese Academy of Sciences

TITLE: "The Keshan Disease in China: A Study of the Geographical Epidemiology"

SOURCE: Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 34 No 2, Jun 79 pp 85-103

EXCERPT FROM ENGLISH ABSTRACT: The so-called Keshan disease is an endemic myocardosis. It was first identified in 1935 in Keshan county, Heilongjiang province, yet, up to date, the cause of this disease has not yet been well known. This paper tries to elucidate the geographical distribution and other basic epidemiological characteristics of the disease from geographical point of view,

[Continuation of DILI XUEBAO Vol 34, No 2, Jun 79 pp 85-103]

with a view to providing a geoscientific background for checking and curing the disease according to specific local conditions.

Coauthors are LU Yilun [7120 3015 0243], WANG Lizhen [3769 7787 3791], ZHAO Naiqin [6392 0035 5367], ZHU Ziyu [2612 4793 3842], ZHU Dezhu [2612 1795 3796], and WANG Wuyi [3769 0063 0001]. LUO Xiuyue [5012 0208 1471], ZHANG Zhuchao [1728 4376 6389], CHEN Nengjian [7115 5174 1017], BA Yin [1572 7299] et al. took part some of the work. The authors are indebted to the Endemic Disease Leadership Section Office, Chinese Communist Party Central, for their oversight of this study. Also, thanks are due to related fraternal units of the epidemic prevention and health departments of province, prefecture and county levels.

AUTHOR: SHE Zhixiang [0152 0037 4382]

ORG: Jiangsu Institute of Geography

TITLE: "New Features in the Development of Agricultural Regions and New Problems Concerning the Distribution for Agricultural Production in Jiangsu Province"

SOURCE: Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 34 No 2, Jun 79 pp 104-117

EXCERPTS FROM ENGLISH ABSTRACT: The six first class agricultural regions set up in Jiangsu in the early 1960s may well be illustrated as fundamentally consistent with the actual geographical conditions, following an observation made in a comparatively long period of time and a recent re-checkup. A number of new changes, however, have been observed such as the case with Xuzhou-Huaiyin region where a single dry-farming was much preferred in early days, but both dry and paddy farming are equally emphasized now. It has become a region where agricultural production has increased with rice output above all the other crops and surplus commodity food capable of being exported as against the insufficient food supply to its own consumption in early days.

It is not unnatural that in different periods of time, the agricultural regions are sure to meet with some different problems of production distribution. The

[Continuation of DILI XUEBAO Vol 34, No 2, Jun 79 pp 104-117]

three major problems in the agricultural regions in Jiangsu are described in this article.

AUTHOR: TANG Jicheng [3282 1142 2052]

ORG: Institute of Geography, Chinese Academy of Sciences

TITLE: "An Analysis on Main Features of Runoff in the Tian Shan Mountains"

SOURCE: Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 34 No 2, Jun 79 pp 118-128

TEXT OF ENGLISH ABSTRACT: The Tian Shan is a famous mountain range in the arid region in China. From its southern and northern slopes, there flow many perennial rivers such as Ili He, Manas He, Maidu He, Weigan He, Aksu He and so on.

Total annual runoff volume amounts to 56,300 million m³.

One of main features of runoff in the Tian Shan is that its vertical zonation being very prominent. The rivers are mainly fed by alpine glacial melt water, which is also another main feature of runoff in the arid region in China.

The author is grateful to GUO Jinghui [6753 2417 6540] and ZHAO Songqiao [6392 2646 0829] for their revision of the paper.

AUTHOR: GONG Gaofa [7895 7559 3127]
CHEN Enjiu [7115 1869 0046]
WEN Huanran [2429 3562 3544]

ORG: All of Institute of Geography, Chinese Academy of Sciences

TITLE: "The Climatic Fluctuations in the Heilongjiang Province, China"

SOURCE: Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 34 No 2, Jun 79 pp 129-138

TEXT OF ENGLISH ABSTRACT: Based on the historical documents, the tree rings, the fluctuating water levels of lakes as well as modern instrumental data, the climatic fluctuations in the Heilongjiang province during recent 400 years are analyzed. The climate since 1909 (the first year with modern instrumental observations) has been warmer than that of 17th-19th centuries. During recent 400 years, the 17th century was the coldest, while the temperature of the 18th century was quite similar with that of the 20th century, although a little bit lower. The 50s-60s of the 17th century was the "climax" of the so-called "Little Ice Age", with the growing season more than one month shorter than today, and the ice-thickness of the Heilongjiang (Amur River) more than one meter thicker.

[Continuation of DILI XUEBAO Vol 34, No 2, Jun 79 pp 129-138]

In the present century, there has been two cycles of thermal changes. Before 1945, the annual temperature has been increasing, while after that year, decreasing. Comparing the 1960-1975 period with that of 1945-1959, the cumulative temperature $\geq 10^{\circ}\text{C}$ was 100°C lesser, and the growing season five days shorter.

If we take the ratio of the total times of flood to the total times of both flood and drought in the historical documents as the moisture index, it is 0.74 before 1880, and 0.55 after that year; it shows that the latter period has been drier.

According to the fluctuating water levels of lakes and modern precipitation data, western part of the Heilongjiang province has undergone three cycles of wet-and-dry alternation since the 19th century. After 1960, the climate has tended to be drier.

The authors are appreciative of LIU Jirong [0491 4949 2837] for drawing the diagrams and of GUO Shaocun [6753 4801 1317] at the Genhe Weather Station for supplying annual ring data.

AUTHOR: LI Changming [2621 7022 2494]

ORG: Department of Mathematics, Guizhou University

TITLE: "On the Classification of Map Projections"

SOURCE: Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 34 No 2, Jun 79 pp 139-155

TEXT OF ENGLISH ABSTRACT: Through analyzing the invariants in map projection and according to the conditions whether there are any directions along which length of segments is true, the author finds that the projections can be mainly divided into three categories, i.e., elliptic, parabolic and hyperbolic. A new way of studying map projection has been derived and the problems remained in Professor Wu's monograph "Mathematic Cartography" (1964 in Chinese) are solved.

The author thanks XU Yanyan [1776 3601 3601] for drawing the diagrams in the paper

AUTHOR: LI Jian [2621 2793]
CHEN Qinde [7115 3830 1795]
KANG Zhicheng [1660 1807 2052]

ORG: LI and KANG of Chengdu Institute of Geography, Chinese Academy of Sciences;
CHEN of Lanzhou Institute of Glaciology and Cryopedology, Chinese Academy of Sciences

TITLE: "A Study on the Mudflow of the Jiangjia Ravine, Dongchuan District, Yunnan Province"

SOURCE: Beijing DILI XUEBAO [ACTA GEOGRAPHICA SINICA] in Chinese Vol 34 No 2, Jun 79 pp 156-168

TEXT OF ENGLISH ABSTRACT: The mudflow of the Jiangjia Ravine, Dongchuan District, Yunnan Province, is one of the typical large-scale mudflow in China. With a frequency of "bursting" 10 to even more than 20 times each year, it has a maximum discharge of $2420 \text{ m}^3/\text{sec.}$, a maximum velocity of 15 m/sec. and a maximum density of 2.37 tons/m^3 .

It is caused by several natural parameters, such as peculiar geological structure and hydro-meteorological feature which are conducive to mudflowing. Yet, the most important one is human factor--the destruction of forest vegetation in large areas. The mudflow had its origin only about 400 years ago. Since

[Continuation of DILI XUEBAO Vol 34, No 2, Jun 79 pp 156-168]

then, according as the forest being cut over rapidly, the mudflow has accelerated in proportion, resulting in an intensive gully-dissection in the upper reaches and a continuous thick deposition in the lower reaches.

The authors are thankful to YAO Deji [1202 1795 1015] and LUO Defu [5012 1795 1381] for valuable comments on the paper.

AUTHOR: CUI Qiwu /1508 0796 2976/
SUN Yanjun /1327 1693 0193/(since deceased)

ORG: Both of Shenyang Institute of Forestry and Pedology, Chinese Academy of Sciences

TITLE: "On the Correlative Equation of the Heat and Water Balance"

SOURCE: Beijing DILI XUEBAO /ACTA GEOGRAPHICA SINICA/ in Chinese Vol 34 No 2, Jun 79 pp 169-177

EXCERPT FROM ENGLISH ABSTRACT: In his article "On the Climatology of Heat Balance", A. S. Monin criticized M. I. Boudko's corresponding work "On the Climatology of Heat Balance." In these two articles, the correlative equation of the heat and water balance, presented by M. I. Boudko in 1948, was also discussed. The authors of this paper, with a view to the evaporation of the dry-land relating to the heat exchange and the water exchange, derive a new correlative equation as follows:

$$\begin{aligned}E &= E(r, R) \\(\partial E / \partial r) &= \sqrt{1 - (LE) / R} (E / r) \\(\partial E / \partial R) &= \sqrt{1 - (E / r)} (E / R)\end{aligned}$$

Oceanography

AUTHORS: CHEN Dechang [7115 1795 2490]
WANG Wei [3769 5633]

ORG: None

TITLE: "Extracting Bromine From Sea Water"

SOURCE: Peking HAIYANG [OCEANS] in Chinese No 5, May 79 pp 5-7

ABSTRACT: Bromine compounds are of importance in many areas including medicine, pesticides, photography and motor fuel additives. The usual production process entails acidifying sea water with sulfuric acid, oxidizing bromide to free bromine with chlorine, blowing out the chlorine with air, absorption of the bromine by sodium carbonate, and recovery of the bromine with sulfuric acid. This process is still somewhat expensive, and attempts have been made to improve it by absorbing the bromine with SO_2 or a sodium bromide solution. Adsorption by resins has also been tried. In 1972 China developed type 717 ion-exchange resin to adsorb bromine from sea water, but this process still retained most of the disadvantages of the air-blowing process. Starting in the 60's, China built 100-ton capacity bromine plants in the various maritime provinces, which partially supply the nation's requirements. Now there is hope that the recently-developed high-efficiency absorption compound JA-2, which can adsorb 100 mg of bromide ion per gram of compound, may make China's bromine industry more efficient. Pilot commercial testing is expected soon.

AUTHOR: ZHAO Yue-long [6392 1971 7893]

ORG: None

TITLE: "The Country Obtains Manganese Nodules from the Sea Bottom"

SOURCE: Peking HAIYANG [OCEANS] in Chinese No 5, May 79 p 7

ABSTRACT: The Chinese research ship Xiangyanghong [0686 7122 4767] No 5 recently obtained manganese nodules from depths of 4,000 and 5,000 meters on the sea bottom. American estimates are that there are 20-30 billion tons of these nodules on the sea bottom and that every year 10 million more tons are created. The nodules newly produced in one year could supply the world's copper needs for three years. The best quality nodules are found between 4,000 and 6,000 meters deep. Current technology limits undersea mining to only the surface layer. The largest nodule obtained by the Chinese research ship measured 3 cm in diameter. Chinese technology is still far behind that of the industrially developed nations, but great forward strides are expected to follow this beginning.

AUTHOR: LIU Bingsui [0491 4426 4934]

ORG: None

TITLE: "Equipment for Collecting Deep-Sea Manganese Nodules"

SOURCE: Peking HAIYANG [OCEANS] In Chinese No 7, Jul 79 pp 27-29

ABSTRACT: Manganese nodules are located 2,000-6,000 meters deep on the sea floor and in the mud. The simplest method of mining them is a scoop dragged along the sea bottom; moving blades help dig the nodules out of the mud, the scoop is vibrated slightly to move the nodules inside, and the bottom has openings from mud and debris to leave. An extension of this idea is a series of scoops on a continuous line which is cycled continuously by motors on the mother ship. Another technique is the "vacuum cleaner" technique in which the nodules are removed from the sea bottom by suction and conveyed to the ship through piping; in a variant, compressed air is pumped in halfway up the pipe, forming a slurry which rises to the surface. Flotation boxes are provided at different points along the piping. In a third alternative, a lighter-than-water oil is used to float the nodules to the surface. Submarines may also be used for collecting the nodules. A submarine may have an external gripper to pick them up or it may draw them into a hold. In the latter case, in order for the loaded submarine to be able to rise to the surface, it must either start with ballast which it gradually discards or have external tanks into which it pumps compressed air when it is ready to surface.

AUTHOR: CAI Gun [5591 7721]

ORG: None

TITLE: "Can Mines Distinguish Friend From Foe?"

SOURCE: Peking HAIYANG [OCEANS] in Chinese No 7, Jul 79 pp 30-31

ABSTRACT: The first selective mines were remote-controlled mines, activated either by wire, by radar or by electrical signals. These could be activated from shore when an enemy vessel approached. The US Navy CAPTOR system has an electronic memory which stores the sound signatures of US and friendly submarines. When activated, it listens to the sounds of passing ships and launches a torpedo when an unfamiliar sound signature is detected. The US plans to deploy new minefields in harbors and sea lanes which could selectively destroy enemy ships.

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CSO: 4009

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 XU Guifang /1776 2710 5364/
 LIU Gengtao /0491 5087 7118/
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 SONG Zhenyu /1345 2182 3768/

ORG: All of Institute of Materia Medica, Chinese Academy of Medical Sciences

TITLE: "A Comparison of the Pharmacological Actions of Seven Constituents Isolated From Fructus Schizandrae"

SOURCE: Beijing YAOXUE XUEBAO /ACTA PHARMACEUTICA SINICA/ in Chinese No 1, 22 Jan 79 pp 1-7

TEXT OF ENGLISH ABSTRACT:

From the ethanol extract of dried fruit of *Schizandra chinensis* Baill. (Fructus Schizandrae) seven constituents have been isolated. All these substances were shown to be active in lowering the high SGPT level to various extents in CCl₄ intoxicated mice. Improvement of histological figure of liver tissue was also observed. The SGPT lowering activities of these compounds may be arranged as follows: VII > V > III > II > I > VI > IV. Compounds VII and V showed significant SGPT lowering activity at an oral dose of 12.5 mg/kg whereas compounds VI and IV showed such an effect only at a dosage as large as 200 mg/kg.

/Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 1-7/

Since the improvement of the histological changes of the liver tissue by these substances did not seem parallel to their activities in lowering the SGPT level, the effect of these agents on liver GPT (LGPT) level was studied. Compounds VII, V, III and II were shown to lower the LGPT level. In another experiment it was found that the LGPT level of animals treated with compound II 24 hours previously was lower than that of control animals. However, the LGPT level showed a tendency to increase, instead of decrease, if the drug was given 40 hours prior to sacrifice. So it is likely that the inhibition of these constituents on LGPT may be a temporary and reversible process.

Glycogenesis was found to be promoted in fasted mice by the administration of compounds V, IV, II and I, among which compound V was the most effective with a potency comparable to that of cortisone. Since such an effect can also be shown in adrenalectomized mice, it is reasonable to presume that the effect of these agents on glycogenesis is not mediated by the pituitary-adrenal system. No effect on glycogenesis was demonstrated for compounds III, VI and VII.

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 1-7]

Compounds V, II and VII showed a biphasic effect on pentobarbital sleeping time (PST), i.e., the PST was prolonged when these agents were given one hour prior to the injection of pentobarbital, whereas the PST was shortened when the interval between the administration of the constituents and the hypnotic was 24 hours. Compound III exhibited only the prolongation phase, while compound I showed no significant effect on PST. This implies that these substances may have very different effects on the hepatic drug metabolizing enzyme system.

This article was received for publication on 5 August 1977. The authors thank Dr. SONG Laifeng [1345 0171 7364] of Fuwai Hospital and ZENG Yongsu [2582 3057 5685] of the Institute of Materia Medica for assisting in observations of pathological specimens.

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ZHUANG Qingqi [5445 1987 4388]
LIU Guizhen [0491 2710 6297]
JIE Wanjin [6043 1238 4897]

ORG: Department of Pharmacy, First Shanghai Medical College

TITLE: "Rapid Screening Method for Hypcholesterolemic Agents"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 8-11

TEXT OF ENGLISH ABSTRACT:

For the purpose of rapid screening of hypcholesterolemic agents, we applied the Wybenga's method with slight modification to determine the serum cholesterol level of normal male rats. We did a series of experiments. Results showed that the cholesterol level of rats presented a pattern of normal distribution. Weekly blood-sampling or daily stomach-intubation had no influence on the cholesterol level. Thus we considered that normal male rats could be employed as an animal model for screening hypcholesterolemic drugs. Thereafter, we used the method to test the hypcholesterolemic effect of heshouwu (*Polygonum multiflorum* Thunb.), scale-oil of hairtail (*Trichiurus chinensis*) and "compound

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 8-11]

phosphoesterase tablets." The data showed that heshouwu and scale-oil of hairtail were both effective, they lowered the serum cholesterol by 20 percent, which was considered as the critical value of effectiveness, but "compound phosphoesterase tablets" did not show any effect at all.

This article was received for publication on 15 November 1977.

AUTHOR: YANG Jinlong [2799 6855 7893]
HAN Jiaxian [7281 1367 8300]
XU Bin [5171 1755]

ORG: All of Shanghai Institute of Materia Medica, Chinese Academy of Sciences

TITLE: "Influence of Sodium Camptothecin on the Concomitant Tumor Immunity in Mice"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 12-17

TEXT OF ENGLISH ABSTRACT:

Sodium camptothecin is a new anticancer drug used in this country. Recently, we have studied further its influence on immune activity in mice. The results were as follows:

Two strains of transplantable mouse tumor (hepatoma & ascitic reticulosarcoma, ARS) were employed. Experiments showed that tumor-bearing mice could reject second isograft of the same tumor implantation. This phenomenon is referred to concomitant tumor immunity (CTI). Taking CTI as criteria, the immuno-suppressive effect of camptothecin was investigated. It was found that the drug exhibited significant suppressive effect on CTI when injected ip 1 mg/kg

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79. pp 12-17]

for 9 consecutive days in mice. The schedule of Q4D showed moderate suppression, whereas a single injection of 40 mg/kg produced the least effect. No marked influence on immunity was found when camptothecin was injected ip 12.5 mg/kg for 2 days.

Besides, the immunosuppressive effect of camptothecin was not persistent and the recovery period was about 9 days.

This article was received for publication on 4 January 1978.

AUTHOR: YU Yuwen [2456 3022 2429]
SHAO Jinying [6730 6855 7727]
WU Ruoshu [0702 5387 9452]

ORG: All of Department of Pharmacology, Institute of Materia Medica, Chinese Academy of Medical Sciences

TITLE: "A Simple Method for Testing Antitussive Agents in Mice"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 18-22

TEXT OF ENGLISH ABSTRACT:

A simple and rapid method using mice for testing antitussive agents is reported. Mice were put into a small glass chamber, one by one, and exposed to atomized ammonium hydroxide for various lengths of time. By using a sequential test design the time of exposure that makes 50 percent of mice cough (EDT₅₀) could be easily obtained. Agents which significantly prolong EDT₅₀ are considered to be potential antitussives.

This method has been shown to be suitable to demonstrate the activity and potency of known antitussive drugs such as codeine, toclan, etc. Compounds,

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 18-22]

including germacrone, 4-phenyl-butanone-2 and hyperin which were found in our laboratory to exhibit satisfactory antitussive activity by this method, were also shown to be effective in controlling cough clinically.

This article was received for publication on 4 January 1978.

AUTHOR: XU Bingsheng [1776 3521 5116]

ORG: Department of Biology, Fudan University

TITLE: "A Botanical Study of the Chinese Drug Jinyinhua"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 23-34

EXCERPTS FROM ENGLISH ABSTRACT: Jinyinhua is a famous drug often used as an antibiotic in Chinese medicine. According to the ancient herbals, the botanical origin of this drug is probably referred to *Lonicera japonica* Thunb. of the family Caprifoliaceae. A recent investigation in the drug market, however, revealed that the drug under the general name "Jinyinhua" involves many different kinds of plants. Through the examination of 202 samples of commercial drug coming from 158 cities and districts belonging to 16 provinces and autonomous regions of this country, together with herbarium material, the author identified 14 species, 1 subspecies and 2 varieties, all belonging to the genus *Lonicera* Linn.

Among these species, *Lonicera japonica* Thunb keeps its leading position both in quantity and in ranges of geographical distribution. This conclusion is in accordance with the statements in the ancient herbals which take the above

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 23-34]

species to be the genuine one of the drugs. An analytical key for the drugs stated above is provided.

Botanical descriptions of the plants are given together with 15 illustrations of the sample drugs.

This article was received for publication on 22 April 1978. The author is grateful to ZHU Xiuzhu [2612 0208 4554] and YAN Zengnan [0917 1073 0589] for assisting in the collection and systematizing of drug samples, and to LOU Fengming [1236 7685 7686] and ZHANG Rongsheng [1728 2837 3932] for drawing the diagrams.

AUTHOR: XU Lixin [1776 4409 8590]
LIU Airu [0491 1947 5423]

ORG: Both of Institute of Materia Medica, Chinese Academy of Medical Sciences

TITLE: "Determination of Flavonoids by Coulometric Titration: Coulometric Titration of Daidzein"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 35-38

TEXT OF ENGLISH ABSTRACT:

Coulometric titration of daidzein with electrolytically generated bromine was studied.

The titration was carried out in a mixture of 1 M KBr and glacial acetic acid (1:1). An excess of bromine was generated, after standing for a certain time to let the reaction go to completion, a definite amount of arsenous salt was added and bromine was generated again to titrate arsenous salt to a dead stop end point.

From the results, it is concluded that daidzein has reacted with four moles of bromine to give a value of 8, indicating that bromine has substituted all the hydrogen atoms at the positions ortho to the phenolic hydroxyl group.

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 35-38]

This article was received for publication on 17 May 1978.

AUTHOR: SUN Nanjun [1327 0589 0689]
XUE Zhi [5641 2535]
LIANG Xiaotian [2733 2556 1131]
HUANG Liang [7806 6852]

ORG: All of Institute of Materia Medica, Chinese Academy of Medical Sciences

TITLE: "Studies on the Structure of a New Antitumor Agent (Hainanolide)"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1,
22 Jan 79 pp 39-44

TEXT OF ENGLISH ABSTRACT:

Two new constituents, hainanolide and hainanolidol, were isolated from the bark of *Cephalotaxus hainanensis* Li. Hainanolide, whose structure as shown in this paper elucidated on the basis of X-ray crystallography and Spectrometric data (IR, UV, NMR, MS)," was found to be active against sarcoma 180, Walker carcinosarcoma 256, Lewis lung carcinoma, L615 leukemia, P388 leukemia and L1210 leukemia. The structure of hainanolidol is still under investigation.

* identical with harringtonolide^[4].

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 39-44]

This article was received for publication on 15 September 1978. The authors are thankful to colleagues at the Institute of Chemistry and the Institute of Light Exposure, Chinese Academy of Sciences, and Analytical Laboratory of the Institute of Materia Medica for measuring mass spectra, nuclear magnetic resonance spectra, infrared spectra, ultraviolet spectra, and light polarization spectra; to No. 187 Hospital of the Chinese People's Liberation Army for providing raw materials; and to colleagues in the tumor section, Plant Chemistry Laboratory, Institute of Materia Medica for being very helpful in this study.

AUTHOR: XIE Xianyun [6200 0341 6663]

ORG: Department of Pharmaceutics, Wuhan Medical College

TITLE: "The Dissolution Rate and Absorption of Nithiocyamine Solid Dispersion"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 45-48

TEXT OF ENGLISH ABSTRACT:

Nithiocyamine is poorly soluble in water, whose GI absorption is rate limited by dissolution. Reduction of the particle size by micronization generally increases the rate of absorption and/or total bioavailability. The large surface area of the particles which results from the micronization is associated with surface free energy which makes the system thermodynamically unstable. Selecting a physiological inert, easily soluble carrier such as polyethylene glycol 6,000, solid dispersions are prepared by melting method. The formation of thermodynamically stable interstitial solid solution was demonstrated by X-ray diffraction. The dissolution rate of nithiocyamine-polyethylene glycol 6,000 (1:9) was found respectively to be 10.6 and 15 times than that of micronized and pure nithiocyamine. In the in vivo studies on mouse, the total areas

under the blood concentration curves in 24 hrs for micronized nithiocyamine were found to be approximately only 59% of those obtained from nithiocyamine-polyethylene glycol 6,000 solid dispersions.

This article was received for publication on 12 July 1978. The author thanks Professor HU Chongjia [5170 1504 1367] of the Pharmacology Teaching and Research Laboratory, Wuhan Medical College for revising the article; MENG Ximin [1322 6932 3046] of the Wuhan Institute of Materials Protection for assisting in measurements of the X-ray diffraction experiment.

AUTHOR: LIU Guoxiong [0491 0948 7160]
LI Shuyuan [2621 3219 1254]

ORG: Both of Department of Pharmacology, Zunyi Medical College

TITLE: "A Modification of the Experimental Apparatus for Evaluating Antitussive Drugs in Mice"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 49-51

TEXT OF ENGLISH ABSTRACT:

A modification of the experimental apparatus widely used in our country for evaluating antitussive agents in mice was made. The important points of modification include: (a) by using compressed air passing through an arterial cannula, ammonia gas was used instead of ammonia aerosol to induce cough; (b) a large glass chamber was used in place of a small glass chamber for holding the mice.

With the modified apparatus, the EDT₅₀ of the control animals and the effective dose of codeine phosphate for controlling cough are all similar to those obtained with the original method. The main advantage of the modified apparatus as compared with the original one is twofold, namely, simpler in construction and easier to operate.

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 49-51]

This article was received for publication on 5 December 1977. The authors are appreciative to Professor ZHANG Yi [1728 3015] of Teaching and Research Laboratory, Department of Pharmacology for guidance in this investigation.

AUTHOR: GAI Junchao [5591 0193 6389]
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ORG: GAI and REN of Shanghai Institute of Materia Medica, Chinese Academy of Sciences; PAN of Shanghai Institute of Dyestuffs and Paints

TITLE: "Tumor Chemotherapy: XXXIII Synthesis of Some 2-Substituted-1, 5-Bis-(Benzyl) Tetrahydroimidazoles and Hexahydropyrimidines"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1, 22 Jan 79 pp 52-54

TEXT OF ENGLISH ABSTRACT:

In the present communication seven 2-substituted-1,3-bis-(benzyl)-tetrahydroimidazoles (III_a-III_g) and four 2-substituted-1, 3-bis-(benzyl)-hexahydropyrimidines (IV_a-IV_d) were synthesized as potential antitumour agents. These compounds were obtained by condensing N,N'-bis-(benzyl)-ethylenediamine (or trimethylenediamine) with appropriate benzaldehyde in the presence of a few drops of piperidine. Preliminary pharmacological tests showed that compounds III_a, III_b and III_c exhibited moderate inhibition (about 50%) against sarcoma 180 in mice.

[Continuation of YAOXUE XUEBAO, No 1, 22 Jan 79, pp 52-54]

This article was received for publication on 9 January 1978.

AUTHOR: XU Duanzheng [1776 4551 2973]

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TITLE: "Drug Sequential Analysis"

SOURCE: Beijing YAOXUE XUEBAO [ACTA PHARMACEUTICA SINICA] in Chinese No 1,
22 Jan 79 pp 55-64

TEXT OF ENGLISH ABSTRACT:

Sequential analysis of qualitative and quantitative responses are described in detail and an example of pharmacological studies of Kuan-Xin-Su-He pill is presented.

For the tests, the experimenter must decide in advance what differences between the true effects of the treatments he wishes to be fairly certain of detecting, if it exists, and what risks of failing to reach a correct conclusion he will accept. A criterion of the sequential test can then be defined. According to the criterion, a simple graphical method can be performed by tables herein recommended.

This article was received for publication on 4 January 1978.

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SCIENTIFIC DEVELOPMENTS

AUTHORS: CHEN Shanghui [7115 0006 1145]
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ORG: None

TITLE: "The Three Large Lakes on the North Central China Water Regulation System"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] In Chinese No 6, Jun 79 pp 9-11

ABSTRACT: The North Central China Water Regulation Project [Nanshui Beitiao 0589 3055 0554 6148] stretches 1,150 kilometers and is intended to draw a total of 300 million cubic meters of water a year from the Yangtze River to be stored and used for industrial and agricultural purposes. The heart of this storage system is three large lakes spaced about 100 km apart with differences in altitude of about 10 meters. The total water storage capacity is 77 million cubic meters and their effective capacity about 60 million. Hongze [3163 3419] Lake was formed from several smaller water bodies in 1194 when the Yellow River changed its course to the south. It receives an average of 332 million cubic meters of water a year from the Huai River; the maximum is 923 million and the minimum 76 million. Its area varies from 1,000 square kilometers at a depth of 11 feet to 3,000 square kilometers at flood. Among engineering work done on it since 1949, the 1953 Sanhe [0005 3109] Dam, 700 meters long, is the most important.

[continuation of KEXUE SHIYAN in Chinese No 6, Jul 79 pp 9-11]

To the north, Loma [7482 7456] Lake, also formed by the southward turn of the Yellow River, has an area of over 300 square kilometers and an effective water storage volume of 5,009 thousand cubic meters. Further to the north, Nansi [0589 0934] Lake, formed from four smaller lakes by the agency of the Yellow River, is 115 km long and 5-30 km wide, with an area of 1,266 square kilometers. It is divided into two sections, 67 and 48 kilometers long, by a dam; the depths of the two sections differ by about 1 or 2 meters. Its effective water storage capacity is 19 million cubic meters.

AUTHOR: Bao Yunqiao [7637 0061 2884]

ORG: None

TITLE: "The Nuclear-Powered Rocket of the Future"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 6, Jun 79
pp 14-15

ABSTRACT: A possible manned mission to Mars with a crew of 7 in an 80-meter-long nuclear-powered rocket will take 180 days to reach its destination, will spend 10-14 days on the surface, and will take 200 days to return. A nuclear-powered engine (using U-235 or U-239) is the most likely means of propulsion. Four designs are described. The superheated exhaust engine will use a reactor to heat liquid hydrogen to over 4000° C, after which it will be ejected from the exhaust. A plasma compression engine will use electric current produced by a reactor to heat hydrogen to plasma temperature (70,000° C), after which it will be ejected through the exhaust by a magnetic field. In a gaseous-core reactor engine, gaseous fuel will heat liquid hydrogen to over 9,000° C and use it as the propellant. The boldest solution is a proposal to use small nuclear explosions as the propulsive force. The first alternative will probably not produce enough thrust, while there will be a difficulty producing sufficient electricity in the second alternative. The other two alternatives seem promising.

AUTHOR: CHEN Wuke [7115 0063 0668]

ORG: None

TITLE: "Uses of Nuclear Power"

SOURCE: Peking KEXUESHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 6, Jun 79
pp 16-17

ABSTRACT: Nuclear power offers a solution to the problem of depleted fossil fuel, consumption of which is now doubling every 7-10 years. There is enough uranium and thorium to last 500-600 years, and each kilogram of uranium is equivalent to 3 million kilograms of coal. As of 1977 nuclear power stations worldwide were producing a million kilowatts; 700 power stations with a capacity of over 6 million kW were planned or under construction. Nuclear power does not produce pollutant emissions as fossil fuels do, but radiation and radioactive products pose a danger. The Three Mile Island incident caused no deaths and released less radiation than feared. The US, France and Germany still plan to continue developing nuclear power. International standards allow nuclear plant workers a maximum of 5 rems a year, compared with a dose of 130 millirem from cosmic rays. Radiation produces both physical and genetic effects and can produce a number of diseases. Methods of decontaminating objects with radioactive materials on them include: scrubbing, foaming, chemical removal, ultrasonic removal, water-jet cleaning and others.

AUTHORS: ZHAO Dianwu [6392 3013 0063]
YU Wentao [0151 2429 3447]

ORG: None

TITLE: "Lead Pollution in the Environment"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 6, Jun 79
pp 18-19

ABSTRACT: Lead in the environment is a dangerous pollutant. The main sources are automobile exhaust fumes (tetraethyl lead used in gasoline) and lead smelters. Lead in paints and glazes is another source. Smokers can absorb large amounts from cigarettes. Although much of the lead ingested is excreted, a certain amount is retained; lead levels gradually accumulate and ultimately harm the nervous system, blood and circulatory system. Normal lead content in the urine is 35 mg/liter. Elimination of lead in the environment is a serious problem. Cleaning up of car exhausts by means of catalytic converters, use of electric-powered forms of transportation and elimination of tetraethyl lead in gasoline, and careful treatment measures at lead plants are part of the solution. In cities, trees and green plants provide a "natural filter" for lead.

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ORG: Institute of Geography, CAS

TITLE: "A New Technique for Studying Earthquakes"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 6, Jun 79
pp 33-36

ABSTRACT: The use of satellite-borne sensors in earthquake study and prediction is an important new technique. Earthquakes are caused by faults, and particularly in areas where a number of faults come together, such as the Huailai-Yanqing [2037 0171 1693 1987] Basin in Hebei. These faults show up clearly in satellite pictures taken in different spectral regions: yellow-green, red, near-infrared, far-infrared. Analysis of terrain features then provides additional clues to possible earthquake activity. Unfortunately, not all mobile faults are associated with earthquakes, so that accumulated historical material must also be used. Other aspects related to earthquake activity such as anomalous ground temperatures (sometimes with movement of buried faults) also show up in satellite pictures. Another use of satellite sensing is to assess damage done by earthquakes.

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LI Chonghui [2621 1504 1920]

ORG: None

TITLE: "Cholesterol and Atherosclerosis"

SOURCE: Leking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 6, Jun 79
pp 35-37

ABSTRACT: Although cholesterol is important in body function, being a constituent of lipids and related to the bile acids and steroid hormones, excess cholesterol levels in the blood are clearly related to atherosclerosis. Whether deposition of cholesterol on arterial walls produces hardening or whether atherosclerosis has another cause, the connection with cholesterol levels is clear. Among the ultimate results of atherosclerosis can be coronary attacks and strokes. Blood cholesterol can be lowered by consumption of unsaturated fats and avoidance of foods with more than 200 mg per 100 grams of cholesterol. Avoiding sugars in favor of starches, moderate alcohol consumption and exercise are also important factors. A table of cholesterol content of common foods is provided.

AUTHOR: None

ORG: None

TITLE: "New Areas of Science and Technology"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 6, Jun 79
pp 44-45

ABSTRACT: The following scientific and technical subjects are described: 1. a device for automatic recognition of handwritten Arabic numerals, developed by the Institute of Automation, CAS; 2. developments in the theory of bending of bridge beams, produced by Tongji [0681 3444] University; 3. GXD-201 protein analyzer developed by Huabei Agricultural University; 4. the AB62-15 electrical leakage detector developed by Xiaoshan [5618 1472] Switch Factory, Zhejiang; 5. a medical laser probe using a helium-neon laser, developed by the Shanghai No 2 Optical Instrument Plant.

AUTHORS: CHEN Shangkui [7115 0006 1145]
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ORG: None

TITLE: "Under Construction: Our Country's Largest Minehead Coal-Fired Electric Power Station, the Datong No 2 Power Plant"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 79
pp 8-10

ABSTRACT: The Datong No 2 Power Plant, now under construction, will be built in two stages; the first will have a capacity of 1.2 million kW and the second a capacity of 2.4 million kW. It will be twice as big as the current largest power station, and its annual output of 70-80 million kWh will be equivalent to 1.5 times the entire country's output in 1949. In addition to meeting local needs it will supply Peking via a 360-km 500,000-volt transmission line. Increasing coal haulage volumes make it expedient to locate large generating centers near mines and use high-power transmission lines to convey the electricity. The current ten-year plan calls for the development of 7 more major power bases.

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TITLE: "'Resurrection' By Organ Transplant"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 79
pp 11-13

ABSTRACT: Organ transplants were impossible because of rejection by the recipient's body until the principles of immunology were discovered. A major success came in 1956, when a woman received a kidney transplant from a twin; she is still alive. The human body has two immune systems: the red blood cell system and the white cell system, both of which are genetically determined. One must either seek a donor with the same immunological characteristics or use drugs to suppress the immune reaction (for the white cell system only). After successful development of kidney transplants, the first successful heart transplant was done in 1967. In 1978, 406 were done, with the survival rate being 60% for those under 40 and 20% for those over 40. The first liver transplant came in 1963. Other transplants include those of the pancreas and bone marrow. Kidney transplants are not uncommon in China: as of April 1979 73 had been done in Shanghai. Liver and heart transplants have also been done in China.

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ORG: None

TITLE: "Liver Transplants"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 79
pp 18-20

ABSTRACT: The first liver transplant was done in 1963; as of September 1978 more than 400 had been done, with a 1-year survival rate of about a third. China's first liver transplant was done in October 1977; the longest survival to date is half a year. The liver may be completely replaced or provided with a "supplementary liver." Recipients must be under 45 years old and in good condition excluding the liver. Various obstructions, cirrhosis, metabolic disorders, circulatory problems and liver cancer are possible reasons for transplants. As liver cells can live at most 15 minutes at room temperature when the liver is removed from the donor, scientists have developed a special nutrient fluid which below 15° C will maintain the liver's viability for 6-8 hours. In addition to the complexities of attaching one artery, two veins and the bile duct, surgeons must counter problems such as rapid drop of blood pressure when blood vessels are severed, blood coagulation, excessively high blood sugar, high blood potassium and poisoning by metabolic products. Organ rejection, which may

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be acute or chronic, may be combatted by suppressor drugs, but these are in some degree poisonous to the stomach lining, liver cells and bone marrow, and in addition lower resistance to bacterial infection. Needed improvements in the technique are: better ways of preserving donated organs; better ways of suppressing rejection; development of transplants from other animals. China's Four Modernizations are expected to lead to progress in liver transplants.

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ORG: Nor.e

TITLE: "Fifty Years and Five Thousand Years: The Story of the Outstanding Scientist ZHU Kezhen"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 79 pp 20-23

ABSTRACT: ZHU Kezhen [4555 0668 2823] (1890-1974) was a pioneer in the study of climatic change. Through many years of close observation he established a sequence of natural developments in the springtime which, combined with his extensive reading in Chinese histories and descriptive works, allowed him to determine with relative accuracy how late in the year spring occurred over a long period of Chinese history. He combined this work with archeological evidence from China and the results of Western researches to produce a major paper: "A Preliminary Investigation of Climatic Change in China Over the Last Five Thousand Years." The main findings were: 1. in the initial 2,000 years of the period, from the Yangshao Culture to the Shang culture excavated in the Waste of Yin, the average annual temperature was about 2° warmer than at present, while the January temperature averaged 3-5° higher; 2. thereafter there was a series of fluctuations (with an amplitude of 1-2° C), with minima at 1000 BC and 400, 1200 and 1700 AD; 3. in every 400-800 year period, 50-100 smaller cycles involving variations of 0.5-1° C are observable; 4. the cold cycles generally

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began on the Pacific coast of East Asia and moved west and southward to Europe and Africa. Danish results using oxygen isotope measurements on the ice of Greenland produced results in agreement with ZHU's conclusions.

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ORG: None

TITLE: "Pyrolytic Graphite"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 79
pp 28-29

ABSTRACT: Pyrolytic graphite, formed by heating ordinary graphite to 1600-2200° C in a vacuum, has marked anisotropy of many of its properties. Its crystalline structure consists of thin planes loosely bound to each other. The electrical resistance across these planes is 100 to more than 1,000 times as great as that along them, heat conductivity, tensile strength and the coefficient of expansion behave similarly. Pyrolytic graphite is useful in high-temperature crucibles, rocket nose cones, artificial hearts and pacemakers and nuclear reactors (as a moderator). In addition, it is used in electronics as a cathode material and as a resistor in thin-film applications. In the latter case its properties are improved by addition of certain elements such as boron.

AUTHOR: CHU Yilin [2612 3015 7792]

ORG: None

TITLE: "Beacon of the Sky: The Early Warning Satellite"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 79
pp 36-38

ABSTRACT: In order to detect Soviet missile launches, the United States first deployed a ground-based early warning system in the 50's. When infrared sensor technology became available, satellites equipped with PbS sensors capable of sensing radiation in the 3-5 micron range were launched. These, however, detected not only missile launches but reflected solar radiation, forest fires, smelters and the like, so it became necessary to add television cameras to distinguish between emitters. Other sensors covering the 8-10 micron range were added to track missiles after their engines were turned off. The switch to satellite warning systems increased warning time from 15 to 25 minutes. A system of four early warning satellites launched in 1973 combine infrared and television sensors and nuclear blast detectors, but in order to determine the trajectory of a missile they must be supplemented by ground-based and airborne early warning and over-the-horizon radars.

AUTHOR: None

ORG: None

TITLE: "New Areas of Science and Technology"

SOURCE: Peking KEXUE SHIYAN [SCIENTIFIC EXPERIMENT] in Chinese No 7, Jul 79
pp 46-47

ANSTRACT: The following scientific and technical advances are discussed: a large-size rock grabbing machine for well digging, with a capacity of 0.6 cubic meters, developed by the Changsha Institute of Mining, Ministry of Metallurgy; the TC-11 half-inch magnetic tape drive for computer applications; the AD DGL50 high-head suspended pump for digging of mine shafts in wet conditions; a process for recovering plastic from certain waste films; a 7.6-km cable car system capable of hauling 225 tons per hour, developed by the Peking Institute of Nonferrous Metallurgy; superdeep wells up to 7.75 meters deep.

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